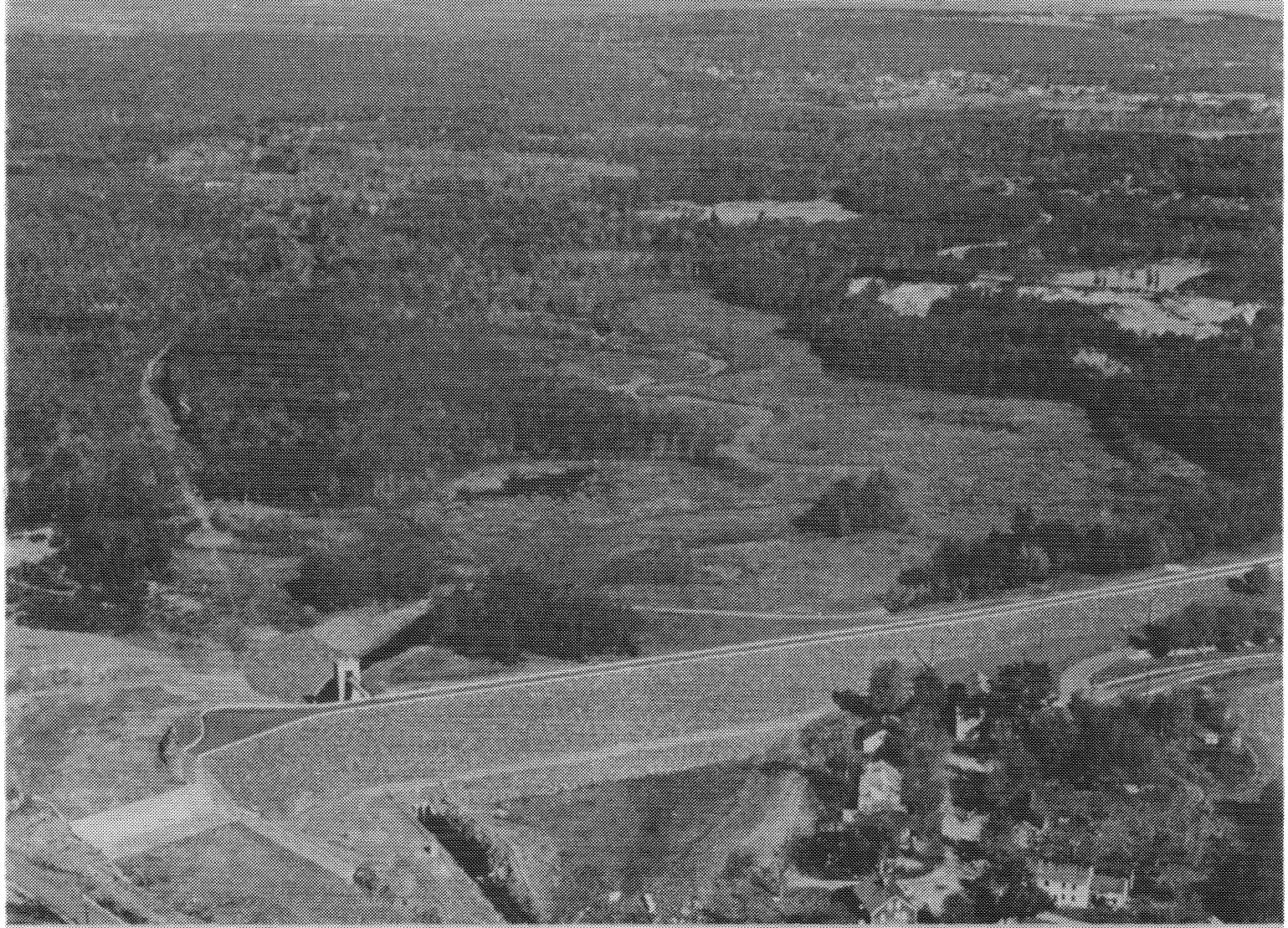
HODGES VILLAGE DAM OXFORD, MASS.

MASTER PLAN
FOR RECREATION RESOURCES DEVELOPMENT



DESIGN MEMORANDUM

SEPTEMBER 1980

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION
CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS

HODGES VILLAGE DAM

OXFORD, MASSACHUSETTS

PROJECT PLAN

FOR THE DEVELOPMENT

OF THE

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PREFACE

Participation in outdoor recreation activities is on the increase nationwide, and particularly in Central Massachusetts which has relatively few public recreation areas. Hodges Village Dam, with its open space and natural setting, is therefore, a valuable recreation site.

This Project Plan has been developed from a study of the recreation requirements of the region and in cooperation with the Commonwealth of Massachusetts, Division of Fisheries and Wildlife and the town of Oxford. Consideration has been given to the environment of the project area, fish and wildlife enhancement, and conservation of natural resources. Optimum development of recreation facilities, with emphasis on quality and compatibility, has been the primary objective in planning the recreational use potential of Hodges Village Dam.

for MAX B. SCHEIDER
Colonel, Corps of Engineers
Division Engineer

II. PROJECT DESCRIPTION

a. Location

Hodges Village Dam is located in the south-central Massachusetts town of Oxford along the French River in the upper Thames River Basin. This basin begins with the Thames River tidal estuary in New London, Connecticut, and extends northward through the eastern third of Connecticut. At Norwich, the river divides into two smaller rivers, the Quinebaug and the Yantic. The Quinebaug sub-basin drains over 50 percent of the Thames basin and covers predominantly its eastern half. Part of this sub-basin, formed by the French River and the upper Quinebaug, extends into the southeastern corner of Hampden County and the Southwestern corner of Worcester County, Massachusetts. (See figure 1)

Hodges Village Dam is on the French River 15 miles above its confluence with the Quinebaug, 0.9 miles west-northwest of the center of Oxford and about 5 miles north of the center of Webster, Massachusetts. The entire flood encroachment area above the dam is in the town of Oxford. (See Figure 2)

b. Project Data

Basin Hydrologic and Climate Survey

The Hodges Village Dam and Reservoir area has a variable climate characterized by frequent, but short, periods of heavy precipitation. The average annual precipitation is approximately 42 inches in Webster, Massachusetts, about 5 miles south of the dam.

Storms over the watershed are of four general types:

* extratropical continental storms which move across the basin under the influence of the prevailing westerly winds.
* extratropical maritime storms which originate over the ocean and move northward along the eastern coast of the United States.
* storms of tropical origin, sometimes of hurricane magnitude and intensity, and
* thunderstorms produced by local convective action or by more general frontal movements.

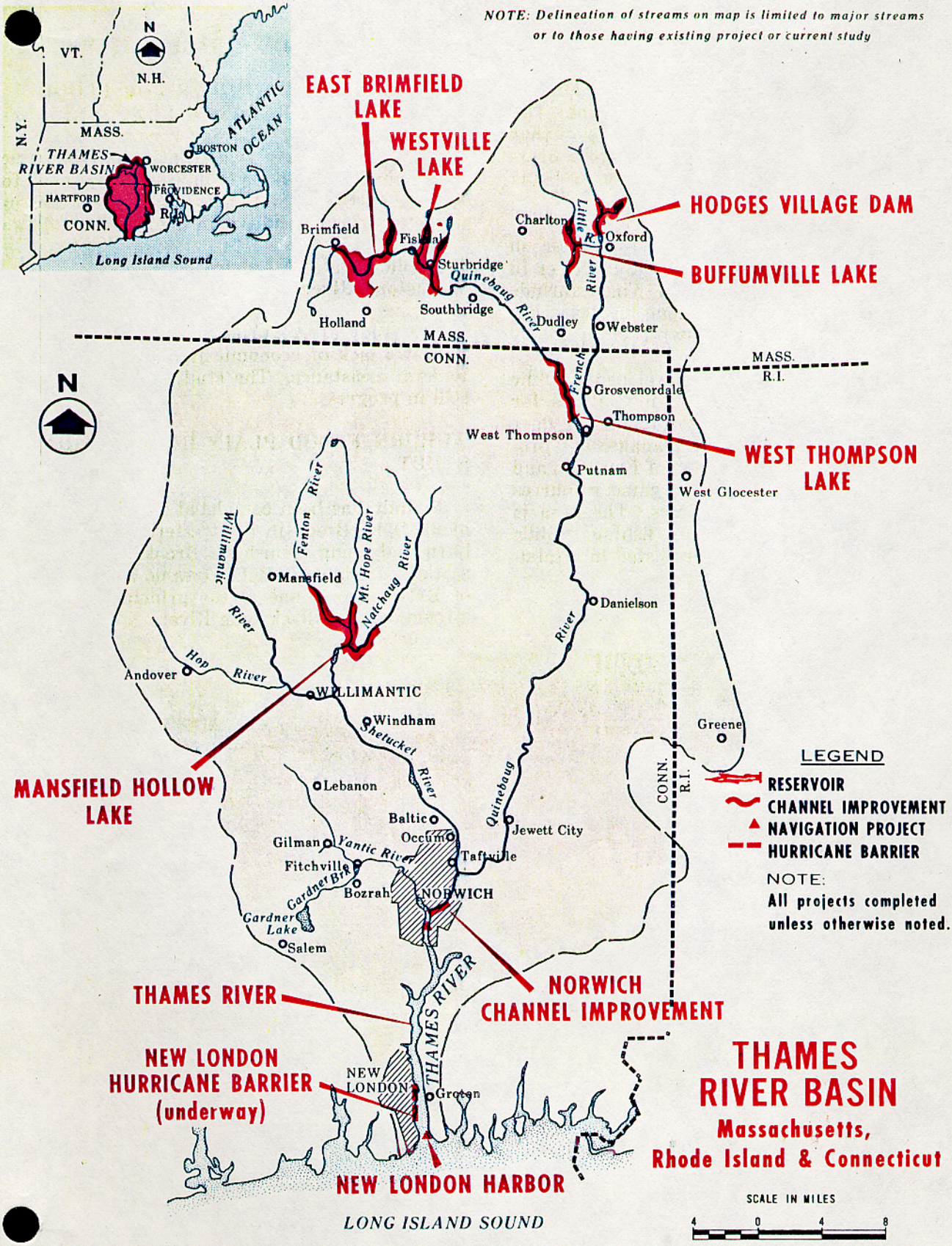
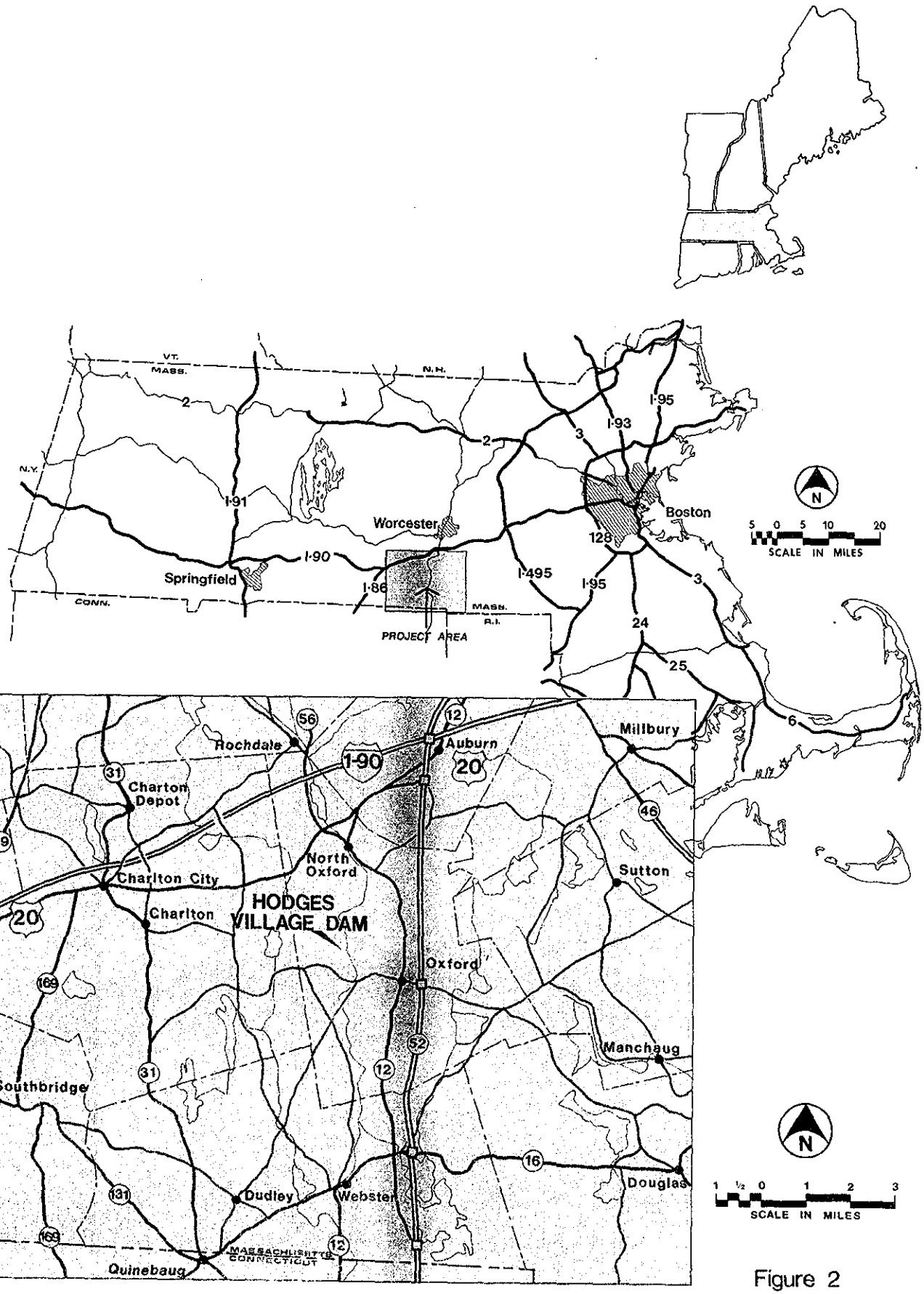

NOTE: Delineation of streams on map is limited to major streams or to those having existing project or current study
VT.
N.H.
N.Y.
MASS.
CONN.
R.I.
ATLANTIC OCEAN
BOSTON
WORCESTER
PROVIDENCE
HARTFORD
THAMES RIVER BASIN
Long Island Sound
EAST BRIMFIELD LAKE
WESTVILLE LAKE
HODGES VILLAGE DAM
BUFFUMVILLE LAKE
WEST THOMPSON LAKE
MANSFIELD HOLLOW LAKE
NORWICH CHANNEL IMPROVEMENT
THAMES RIVER
NEW LONDON HURRICANE BARRIER (underway)
NEW LONDON HARBOR
LONG ISLAND SOUND
Brimfield
Fiskdale
Sturbridge
Holland
Southbridge
Quinebaug River
Charlton
Oxford
Little R.
River
Dudley
Webster
French
Grosvenordale
Thompson
West Thompson
Putnam
West Glocester
Danielson
Greene
Mansfield
Fenton River
Mt. Hope River
Natchaug River
Willimantic River
Hop River
Andover
WILLIMANTIC
Windham
Shetucket River
Lebanon
Baltic
Occum
Jewett City
Gilman
Yantic River
Fitchville
Taftville
Bozrah
NORWICH
Gardner Brook
Gardner Lake
Salem
NEW LONDON
Groton
LEGEND
RESERVOIR
CHANNEL IMPROVEMENT
NAVIGATION PROJECT
HURRICANE BARRIER
NOTE:
All projects completed unless otherwise noted.
THAMES RIVER BASIN
Massachusetts, Rhode Island & Connecticut
SCALE IN MILES
4 0 4 8

FIGURE 1


VT.
MASS.
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R.I.
I-91
I-90
I-86
I-95
I-93
I-495
128
2
3
24
25
6
Worcester
Springfield
Boston
PROJECT AREA
SCALE IN MILES
5 0 5 10 20
Rochdale
Auburn
Millbury
Charlton Depot
Charlton City
Charlton
North Oxford
HODGES VILLAGE DAM
Oxford
Sutton
Manchaug
Southbridge
Dudley
Webster
Douglas
Quinebaug
MASSACHUSETTS
CONNECTICUT
1 ½ 0 1 2 3
SCALE IN MILES

Figure 2

Historically, tropical storms have been the most severe and have occurred during late summer and early autumn.

The average annual temperature is about 48°F. The southern part of the watershed has a generally milder climate than the northern part due to the moderating influence of Long Island Sound. The average monthly temperatures range from about 70° F in July and August to 24°F in January and February. Extremes of above 100°F and below -10°F have been recorded.

Reservoir General Character

If filled to the spillway crest elevation of 501 feet NGVD (National Geodetic Vertical Datum), the reservoir's water surface would cover 740 acres with a maximum depth of 36 feet and extend upstream 3 miles along the French River. The reservoir would have a flood storage capacity of 13,250 acre-feet, equivalent to 8.0 inches of runoff from a 31.1 square mile drainage area. The drainage area above the dam area includes more than 25 storage reservoirs, ponds, and millponds.

The terrain surrounding Hodges Village Dam and Reservoir can be generally described as hilly with moderate relief. Elevations in the vicinity of the reservoir range from about 470 feet NGVD in the streambed at the base of Hodges Village Dam to about 840 feet NGVD on Taft Hill, south of Oxford, overlooking the Reservoir. North of the project, the French River flows through a generally narrow valley flanked by high, steepsided hills. Within and below the reservoir area, the valley widens and is partially lined with terraces. When filled to capacity, the reservoir would inundate two ponds and large areas of marsh and swamp.

The French River is formed by the confluence of several small brooks in Leicester, Massachusetts. The River's watershed above the dam has an area of 31.1 square miles, with a total fall of 618 feet along its total length of 28 miles. Within the reservoir, the average gradient is about 8 feet per mile. This grade is gentler than the river's average grade because of the wetland nature of most of the reservoir.

The bedrock underlying the project is chiefly granite rock and phyllite. North of the dam, the French River flows through a valley with a narrow flood plain. Ravines separate flat areas and have small ponds and wetlands. In and below the reservoir area the valley widens. This area is overlain with ice-contact stratified drift and alluvium. These coarse grained materials are good sources of gravel and were actively mined in two pit locations within the project area and continue to be mined on lands immediately adjacent to the project area.

The soil in the parts of the French River valley underlain by ice-contact stratified drift is well-drained but nutrient deficient. The alluvium is well-drained, except in the small wetlands scattered throughout the region.

Project Structures (Operational)

Hodges Village Dam consists of an earth and rockfill embankment with a concrete ogee spillway section. The rolled fill earth embankment section of the dam is 2,050 feet in length with a maximum height of 55 feet. The top of the dam is at elevation 520 feet msl where a paved access road has been constructed.

The 145-foot long concrete ogee spillway situated at the west end of the dam has a crest elevation of 501.0 feet msl. The outlet works consist of two 5-foot by 6-foot rectangular conduits having inverts at elevation 465.5 feet msl. Flow in each conduit is controlled by an independently operated slide gate. The approach channel is excavated in rock and has a bottom width of 10 feet.

Included in the project are four earth dikes which are necessary for closing saddles in the reservoir perimeter. The dikes have a total length of 2,600 feet and a maximum elevation of 520.0 feet msl.

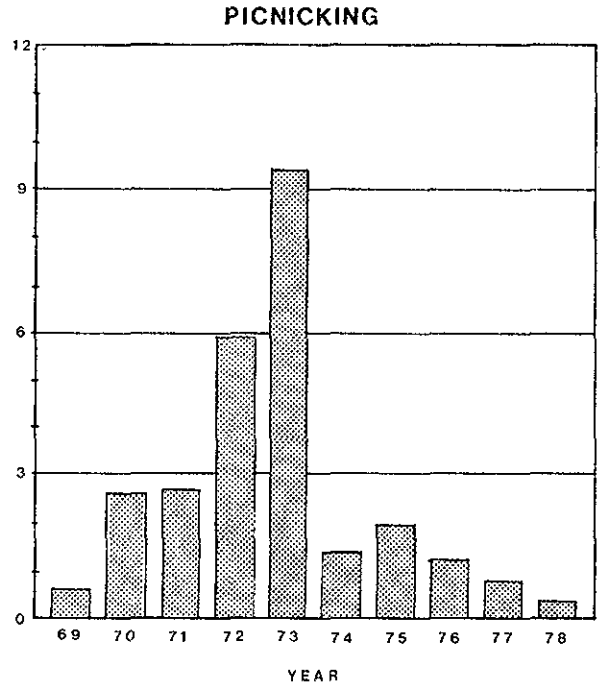
c. Visitation

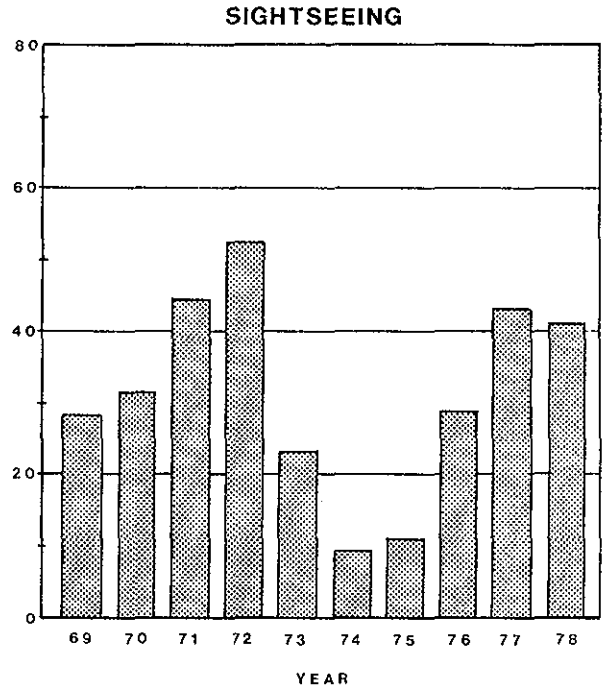
Over the past ten years, visitation to the project area has steadily increased from fewer than 11,000 people in 1966 to over 100,000 since 1976. People utilize the project year-round for such leisure activities as ball playing, fishing, hunting, motorcycling, picnicking, sightseeing, tennis, snowmobiling and horseback riding. Visitation data collected by the Corps of Engineers is illustrated on Figures 3,4, and 5. The data indicates a trend upward toward more active recreation, although attendance figures vary in response to weather and flood control operations.

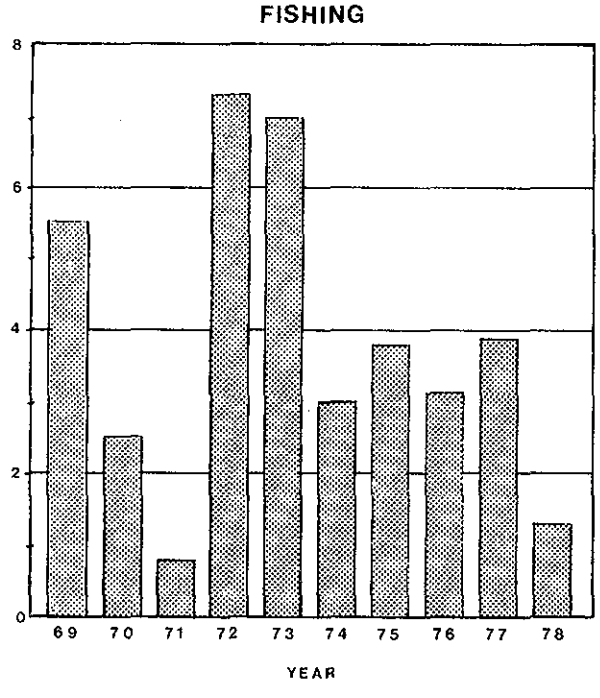
With the ever increasing public demand for outdoor recreational activities, an area that retains its natural qualities while providing the resources for a variety of recreational uses can be expected to be in constant demand. Being located in close proximity to a growing population makes this project all the more attractive to the local area especially in times of increasing cost of transportation.

VISITATION DATA

ANNUAL ATTENDANCE IN THOUSANDS







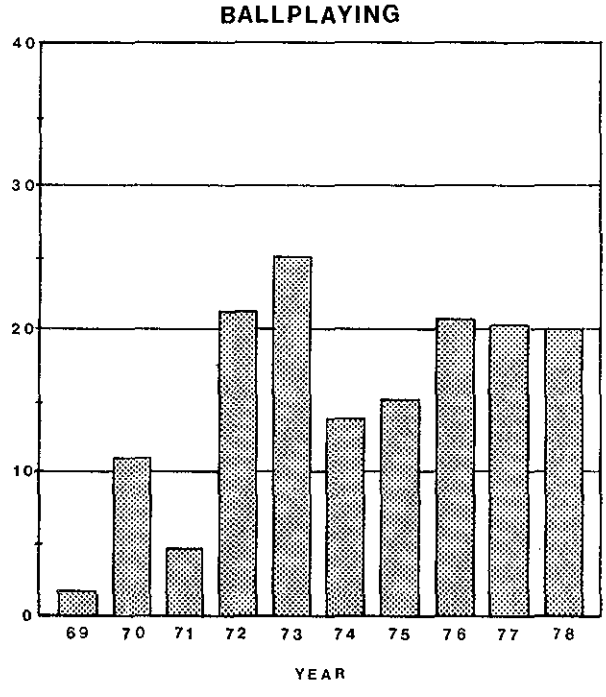


FIGURE 3

VISITATION DATA

ANNUAL ATTENDANCE IN THOUSANDS

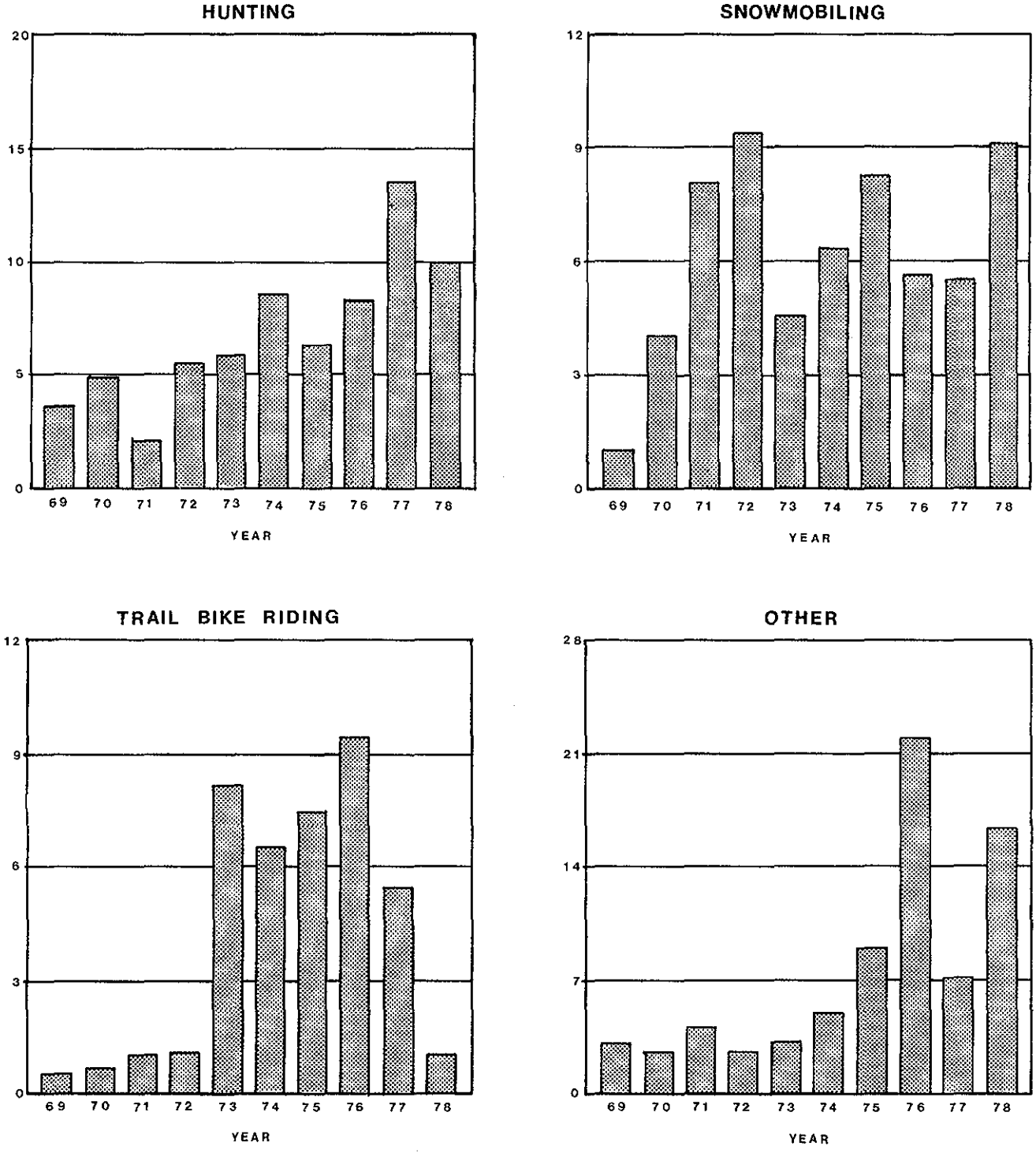
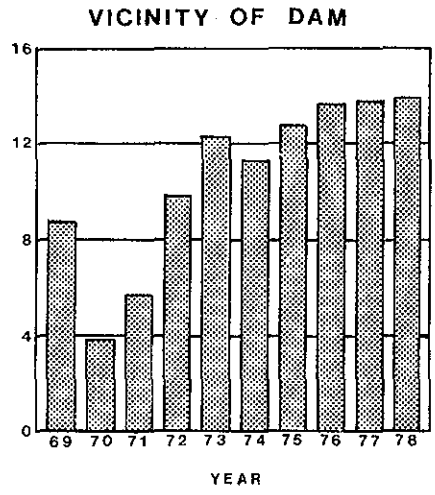
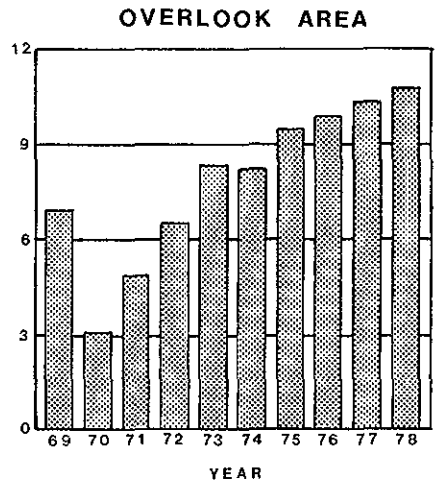


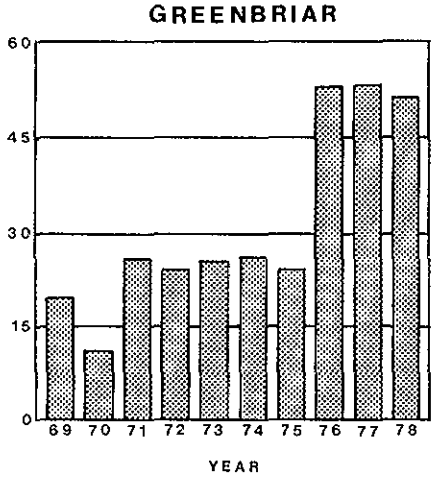
FIGURE 4

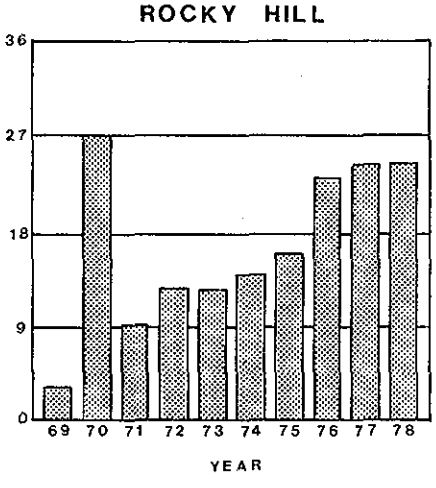
VISITATION DATA

ANNUAL ATTENDANCE IN THOUSANDS









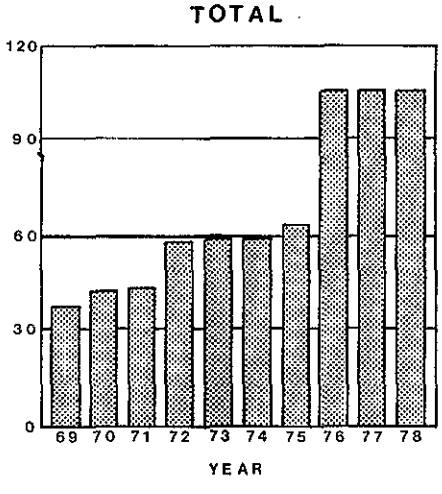


FIGURE 5

III. REGIONAL ANALYSIS

a. Regional Setting

The town of Oxford remains largely rural, with a large proportion of land in woodland and agriculture. Two woolen mills are the town's only manufacturing industries with 26 construction firms and 42 wholesale and retail establishments comprising 74 percent of the town's businesses. The town is encouraging the introduction of new industry by developing an industrial park.

The population of Oxford has increased from 9,282 in 1960 to 10,345 in 1970 to 10,822 in 1975, a 17% increase in 15 years. The majority of the town's inhabitants reside east of the Hodges Village Reservoir, which is accessible via Interstate 90 (Massachusetts Turnpike) which connects to U. S. Route 20 to serve State Routes 12, 21, and 52.

Outdoor recreation areas in Massachusetts and the New England states have experienced increasing use in the past 25 years due primarily to rising metropolitan populations and increased mobility. An increased awareness of and desire to relate to and understand nature and an increase of less-organized leisure activities have contributed to this rise. According to the U. S. Census Bureau data, the population within a one-hour drive of Hodges Village Dam had increased to well over 3,000,000 by 1970. Close proximity to urban areas has become an important feature for many people due to the continually rising price of gasoline.

Several public recreation areas are located near Hodges Village Dam, including Buffumville Lake and State Park, Douglas State Forest, Spencer State Forest and Wells State Park.

b. Public and Agency Involvement

Several agencies within the Commonwealth of Massachusetts with whom past and present recreational planning activities have been coordinated include the Department of Conservation Services; the Department of Fisheries, Wildlife and Recreational Vehicles, Division of Fisheries and Wildlife; the Department of Environmental Management, Division of Forests and Parks; the Department of Community Affairs; and the Department of Public Health. On November 1, 1962, the Division of Fisheries and Wildlife received a 25-year license to maintain and manage 676 acres of the reservoir area for fish and wildlife purposes. All management activities are carried out under the supervision of the Central Wildlife District Manager.

On December 1, 1963, the town of Oxford assumed responsibility under a 25-year lease for park and recreation purposes for the operation, maintenance, and management of the Greenbriar and Rocky Hill Recreation Areas which have a combined area of 109 acres. Management activities are carried out under the supervision of the town of Oxford Recreation Commission. There are no entrance fees or user revenues derived by the town.

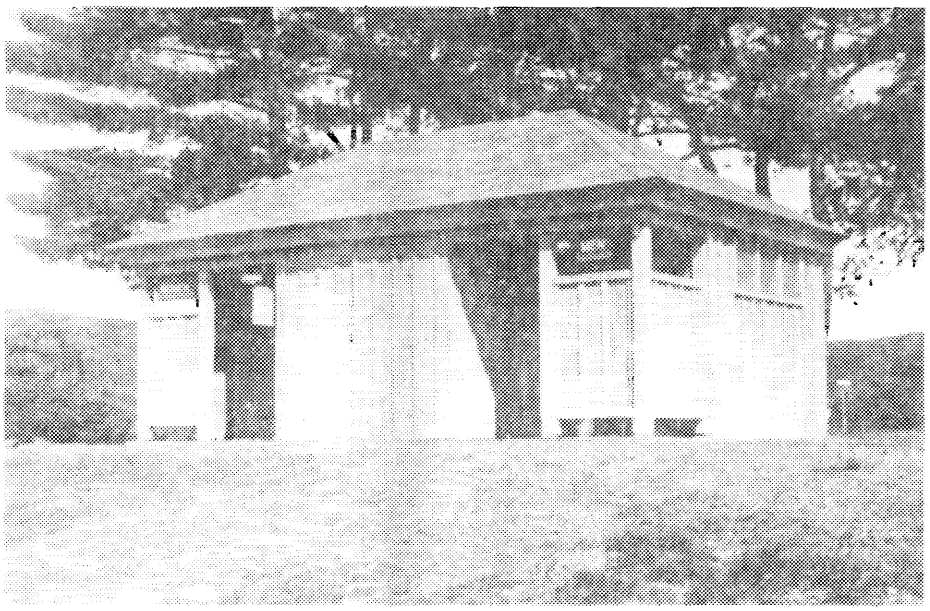
Private recreational expenditures at Hodges Village Reservoir have consisted of the establishment, marking and maintenance of snowmobile trails by the Oxford Snowdusters Snowmobile Club.

Federal agencies with whom coordination of this Project Plan has taken place include the Soil Conservation Service; Heritage, Conservation and Recreation Service; Fish and Wildlife Service, and the Environmental Protection Agency (EPA).

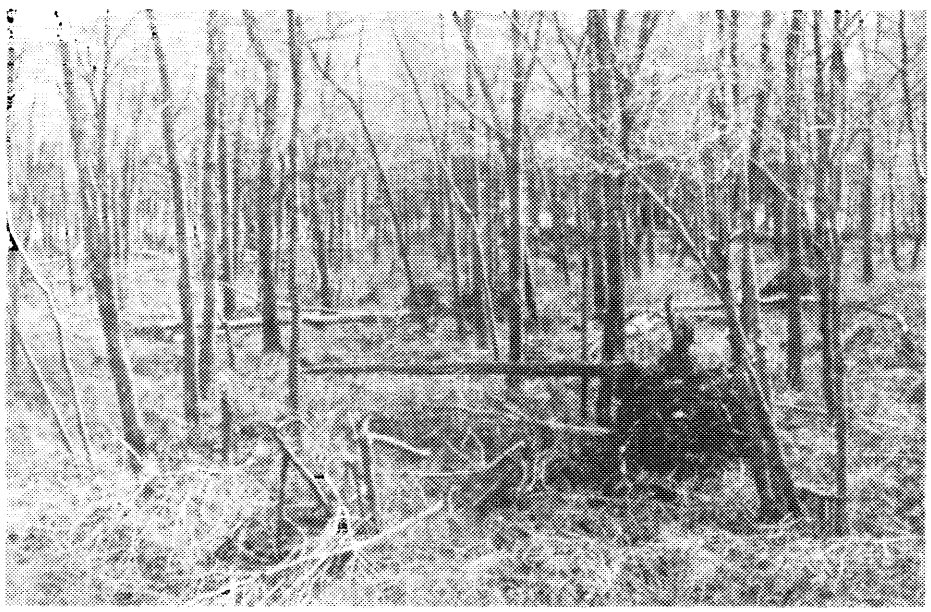
Under authority of the Flood Control Act of 1970 (Title II of Public Law 91-611) Section 216, the Corps of Engineers undertook a study to examine the feasibility of utilizing reservoir storage behind Hodges Village Dam to provide minimum low flow on the French River. The objective of this study, requested by the Director of the Massachusetts Water Resources Commission in 1970 and recommended by the Environmental Protection Agency in 1975, is to investigate the feasibility of modifying the operation and structural elements of the existing project to provide low flow augmentation for water quality improvement in the French River downstream of Hodges Village Dam.

The Massachusetts Division of Water Pollution Control has found that low flow augmentation alone or in combinations with advanced wastewater treatment may be the only economically achievable would be required in order to meet the National goal of 1983. Subsequently, Congressman Christopher J. Dodd of Connecticut requested in 1976 that the Corps of Engineers undertake a study to provide low flow augmentation for the French River to relieve its waste treatment problems.

The plan currently being investigated consists of creating a seasonal impoundment with releases from the reservoir regulated to maintain a minimum flow of 22 cfs at Webster. This would result in a maximum pool of 200 acres at elevation 475.6 feet NGVD and a minimum pool of 90 acres at elevation 472.0 NGVD. At lease 160 acres of the reservoir's area would have to be cleared along with the removal of organic soils in selected areas within the proposed pool. Mitigation measures to offset negative impacts on project fish and wildlife resources will be investigated by the U.S. Fish and Wildlife Service and the Massachusetts Division of Fisheries and Wildlife.



NEWLY CONSTRUCTED REST ROOMS AT THE GREENBRIAR RECREATION AREA



TYPICAL RED MAPLE SWAMP IN THE RESERVOIR AREA

The town of Oxford has indicated concern for the impact that the clearing and stripping may have on the aesthetics and recreation resources in the reservoir. The town also has expressed a desire to obtain some benefit in the form of recreation facilities to offset the impact of the proposed low flow augmentation project. The Massachusetts Division of Water Pollution Control has indicated that funds authorized for the modification of reservoirs to provide low flow augmentation can also be utilized for the non-Federal share of the cost of new recreational facilities. It is, therefore, probable that the Corps of Engineers and the State of Massachusetts will cooperate under Public Law 89-72 in providing the recreational development recommended in this Project Plan, should low flow augmentation be implemented. If this proposal is not implemented, the planned recreation facilities would have to be cost shared with the town of Oxford, if and when funds become available

c. Problems and Needs

The 1978 Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) indicates that bicycling and nature walking are the most popular recreation activities statewide and also show the most significant deficit of facilities. Demand is expected to increase considerably through the year 2000 for nature walking, hiking and picnicking, which is presently the most popular outdoor recreation activity in central and western Massachusetts.

The town of Oxford has indicated a need for additional public park type facilities such as basketball courts, playgrounds, picnic areas, ball fields, and multi-use trails. All of these can be accommodated at Hodges Village Reservoir and would supplement the existing ball fields, tennis courts and trails. Provision of water-based recreation facilities, however, is not possible at this project due to the lack of a lake behind the dam, although excellent potential exists for an extensive trail system between the dam and the town leased Greenbriar Recreation Area at the upper end of the reservoir.

The most significant problems at the present time, in addition to inadequate community recreation facilities, are lack of controlled access to the Greenbriar Recreation Area, no designated parking areas, a rather haphazard unmarked trail system and no landscaping. The town of Oxford also has a difficult management situation with two separated recreation areas at Rocky Hill and Greenbriar. The only recreation facility at Rocky Hill is a Little League baseball field which receives significant use during the Little League season, but is prone to vandalism in this somewhat isolated and unsupervised area at other times.

IV. RESOURCES OF THE PROJECT AREA

a. Natural and Scenic Qualities

The overall visual character of the Hodges Village Reservoir area is mainly that of a second growth mixed hardwood forest of the type typical to southern Massachusetts. The peak time of scenic quality for this area is during the fall foliage season.

The low rolling tree-covered hills and hollows provide a source of visual aesthetic appeal, but this type of landscape interferes with long vistas. The spillway overlook at Hodges Village Dam is the only high point on the site that provides a clear view. From here, the view to the south is of Hodges Village and the lower mill pond. To the north, the view is of the shrub swamp and marsh area.

Due to the constraint upon development imposed by flood control operations, Hodges Village provides an opportunity to preserve undeveloped land in a rapidly urbanizing area. The presence of a large, contiguous, undevelopable area in the region is conducive to the development of several types of recreation opportunities. Multiple-purpose resource management has become accepted by all public agencies as a necessary response to the need for obtaining optimum use of public land. The reservoir has natural resource and recreational values that are an important supplement to the flood control purpose of the project.

Since most of the wetlands are not well suited to heavy recreational use but are valuable to local ecosystems, the lands lying at the lower elevations that are subject to flooding have not been considered for any development. However, trails through and around these areas are planned to allow visitors to enjoy these lands in recognition of their scenic and wildlife value as part of the local ecosystems.

b. Ecological Features

Hodges Village Reservoir contains 874 acres of fee owned land, of which 65% is forested. White pine and white oak predominate in the second growth mixed hardwood forest, with pitch pine taking over the drier sites. Old fields and meadows comprise 15% of the area, with aster, goldenrod and little bluestem dominating, along with some aspen and white pine. Another 20% of the area is wetland, including a red maple-alder swamp, red osier dogwood shrub swamp and black willow along the river banks. In the central portion of the reservoir is a unique Atlantic White Cedar swamp. This swamp is actually a peat bog formed by gradual filling of an old glacial pond with the organic debris of spagnum moss and other plants. Along the southern New England Coast, white cedar dominates these bogs. The highly acidic wet soil also supports an interesting flora of mosses, ferns, pitcher plants and other bog plants.

MARSH NEAR THE OXFORD PUMPING STATION

TYPICAL WETLAND IN THE RESERVOIR AREA

The native ecosystems of the project area were not significantly affected by construction of the dam since no permanent pool was established. Any rise in the water table associated with the construction of the dam has been insignificant. The most noticeable change in the reservoir area has been damage to trees in the marsh near the north end of the reservoir due to periodic flooding.

The periodic upstream inundation caused by flood control operations has not caused significant changes to existing ecosystems due to the nature of the vegetation and soil and to the duration of flooding. About half of the retention area is wetland, and the vegetation in these areas is extremely tolerant to inundation. These wetlands are the lowest areas in the reservoir and, therefore, are subject to the most frequent and prolonged inundation.

The type of vegetation on higher ground is more susceptible to flood damage, however, few trees have been killed by flooding. The higher areas, though subject to inundation, are flooded less frequently and for shorter durations than the low lying areas, and the soils in these area of the reservoir are coarse which allows them to drain quickly.

Oxygen starvation of plant roots is the major cause of tree mortality. Since the longest duration of high water occur in late winter or early spring, most trees are able to survive in the reservoir area because they are still in their winter dormancy. However, impounded flood waters are released as soon as river flood levels beging to recede, thus minimizing the time of inundation. Since this project was completed, there has not been a major flood during the summer months.

Optimal wildlife habitat is also located within the project area. Since the vegetation is very diverse, the wildlife using the habitat is correspondingly diverse. The differences in habitat will delineate various species and their uses of the local environment. For example, the marsh supports small mammals such as muskrat, mole, and mice, and birds such as small herons, rails and wetland songbirds. The shallow waters along the French River attract surface feeders such as black ducks, wood ducks, and mallards.

The reservoir area is stocked annually with about 250 pheasants. A wildlife management area is located on the west side of the French River north of the Hodges Village Dam. It extends along the abandoned railroad bed to about 1,500 feet south of the intersection of the power line easement and the French River. Raccoon, cottontail rabbit, grouse and some quail can be found in this area which is managed by the Massachusetts Division of Fisheries and Wildlife.

Temporary wetlands are important to the life cycles and habits of many species of wildlife, waterfowl and fish. They promote insect production and diversity of vegetation which, in turn, supply food for a variety of fish and birds. Modification of these areas adversely affects the entire food chain of wildlife species from aquatic invertebrates to spawning fish. A reduction of available aquatic and wetland habitat in the reservoir would lead to reduced numbers of aquatic and wetland animals. Any unnatural change in the water

level could affect the breeding success of the marsh and swamp ecosystems. The absence of a permanent pool at Hodges Village is beneficial to wildlife because it has allowed perpetuation of highly productive marshes and shrub swamps.

The effect of flood storage in the reservoir on wildlife depends on the season of flooding, with spring and early summer particularly critical. Wildlife losses could include a reduction in insect production which would decrease availability of this food source to other species, a reduction in fish production if eggs are covered with silt, and a loss of young aquatic mammals and waterfowl because of nest destruction.

c. Cultural Resources

The more notable historic sites within the town of Oxford are the Town Cemetery, Clara Barton's birthplace, the Johnson Massacre Site, the Indian Burial Grounds and several historical churches.

A cultural resource management program has been developed to evaluate the 31 Corps operated and maintained dams and lakes within the jurisdiction of the New England Division. This program is being conducted in compliance with the National Environmental Policy Act, the National Historic Preservation Act, Executive Order 11593: Protection and Enhancement of the Cultural Environment, as well as other related Federal Regulations and Guidelines.

Each year the Corps conducts a cultural resource reconnaissance of three or four flood control projects depending on the availability of funds. This includes an intensive literature search and field reconnaissance of all lands within the Corps jurisdiction and control. Should development of recreation facilities take place during the interim, the areas of direct impact will be reconnaissanced and evaluated prior to any development.

d. Water Quality

The Oxford Water Company, which supplies water to the town of Oxford, operates a well field within the reservoir in the productive stratified drift. The gravel-packed wells yield a half million gallons of high-quality water per day. There is an additional potential yield of over one million gallons per day for the town or other users. The aquifier which the town taps is the largest along the French River in the vicinity of the reservoir and is, therefore, a valuable resource.

The French River in the vicinity of Hodges Village Dam is presently degraded below its approved state classification of "B" and does not meet all of the criteria associated with that standard. Data collected

by the Corps of Engineers from 1975 through June 1977 and by the Massachusetts Division of Water Pollution Control (MDWPC) in June and August 1976 disclose that the standards for dissolved oxygen (DO), coliform bacteria and pH are violated periodically. In addition, concentrations of primary nutrients, nitrogen and phosphorus, are above levels considered necessary for the initiation of algae blooms. The sources of the majority of the nutrient load in the river are effluents from two upstream wastewater treatment plants, the Leicester and Oxford-Rochdale facilities. These discharges are also the cause of the general degradation of the river's quality.

It is expected that water quality conditions in the French River above Hodges Village Dam will be significantly improved by 1983 with the implementation of new management plans for the upstream watershed. Current plans call for either upgrading the Leicester wastewater treatment plant to include advanced treatment with nutrient removal or diverting the wastewater flow out of the French River basin to the upper Blackstone River basin for treatment. The Oxford-Rochdale plant will be upgraded to include advanced treatment or its flow will be diverted to a proposed new treatment facility in the town of Oxford whose effluent will be discharged to the French River below Hodges Village Dam. These actions will remove the major nutrient sources to the proposed augmentation pool, and it is expected that nitrogen and phosphorus loads will then decline to background levels that are below threshold levels needed for algae bloom propagation.

e. Type, Location, and Extent of Earth Borrow

There have been two open-pit gravel mining operations adjacent to the reservoir area since the dam was constructed. The town of Oxford owns and excavates a pit on the east side of the river just above the dam, with some of these operations on private land under flood easement. The Scavone Sand and Gravel Company owns 72 acres of land on the west side of the French River on part of which the Corps of Engineers also has a flowage easement. The Corps has no jurisdiction over the operation of these gravel pits, however.

These mining operations do have unavoidable adverse effects on the reservoir area that create aesthetic, vegetative, erosion, and siltation problems, in addition to higher noise and dust pollution levels.

f. Adjacent Land Use

The privately owned land adjacent to Hodges Village Reservoir on the west is gradually being developed from woodland to residential use, in addition, to the extensive Scavone Sand and Gravel Company excavation operations. The east side of the reservoir is partially

bordered by Massachusetts Route 12 which passes through the center of Oxford. Private residences, the Oxford High School, the North and St. Roche Cemeteries, the Oxford water pumping station and a town gravel pit are all located between the reservoir and Route 12.

V. RESOURCE USE OBJECTIVES

In order to best serve the needs of the public while also enhancing and protecting the project resources at Hodges Village Dam and Reservoir, the following resource use objectives have been developed.

1. Provide a high quality day use park at the Greenbriar Recreation area by expanding the existing recreation opportunities and developing the potential of this popular area to its optimum extent. The town of Oxford badly needs an additional public park at the northern end of town to complement their only other park south of the center of town. Greenbriar is an ideal location since readily developable land is presently available and already used to a significant extent. Provision of a controlled access directly from Massachusetts Route 12 will also make this area very convenient and easier to manage.

2. Continue the present wildlife conservation and management program under the direction of the Massachusetts Division of Fisheries and Wildlife in order to protect valuable wildlife habitat and provide public hunting and fishing opportunities. An excellent way of obtaining optimum use of public land is by multiple purpose resource management. The Hodges Village project area contains a diverse assortment of vegetation and habitat types which support a variety of native wildlife. In addition, pheasants are stocked by the State. Maintenance of this ecologically diversified area will complement the developed recreation facilities and enhance passive uses while preserving most of the reservoir in its natural state.

3. Expand and improve the multiuse trail system throughout the project in cooperation with the town of Oxford. At present, several abandoned roads provide access in the project area and serve as trails for horseback riders, hikers, trail bikers, snowmobilers and cross-country skiers at different times of year. In addition, some trails have been designated for specific uses such as nature walking and cross-country skiing, primarily in connection with educational programs at Oxford High School. Excellent potential exists for a unique trail system between Hodges Village Dam and the Greenbriar Recreation Area which can serve several compatible uses. Woodland, wetland, a cedar swamp, marshes, brooks and the French River all contribute to an interesting setting for trail uses throughout the year, as well as providing an excellent location for field teaching the natural sciences.

VI. PHYSICAL PLAN OF DEVELOPMENT

a. Designation of Resource Use

1. Recreation

All project lands within the Hodges Village Reservoir are available to the public for general recreational use with the exception of a very small area retained by the Corps of Engineers for operation and maintenance around the dam and spillway. Existing land use within the reservoir has been for recreational activities such as ball playing, hunting, snowmobiling and various day activities.

The reservoir comprises 874 acres owned in fee and 264 acres of flowage easement. Of the fee owned area:

- 99 acres are reserved for project operation and maintenance,
- 109 acres, consisting of the Rocky Hill and Greenbriar recreation areas, are leased to the town of Oxford for recreation purposes, and
- 676 acres are licensed to the Massachusetts Division of Fisheries and Wildlife.

The selection of areas for public use development has been determined through field reconnaissance, analysis of topography and consultation with Federal and State agencies and the town of Oxford. Geology, habitat, accessibility by existing roads and trails, proximity to urban centers, existing and future use, and future urban development of the region have all received consideration.

Public recreation areas need to keep stride with the public's increased demands and needs for a variety of activities. People inhabiting the region have specific four-season recreational desires which can be satisfied within the project area. The provision of facilities for a variety of recreational interests has, therefore, been considered to meet present and future public demands. In addition, all planned uses are compatible with the authorized project purpose of flood control and possible future low flow augmentation.

2. Fish and Wildlife Conservation and Management

The fish and wildlife conservation and management program is being handled under the direction of the Massachusetts Division of Fisheries and Wildlife at the Stumpy Pond, Conlin Hill and part of the

PART OF HODGES VILLAGE RESERVOIR WITH THE GREENBRIAR RECREATION AREA IN THE FOREGROUND, OXFORD HIGH SCHOOL IN THE CENTER AND THE TOWN OF OXFORD IN THE BACKGROUND

Rocky Hill areas of the reservoir. At present, some of the uses of the project are compatible with wildlife management while some are not. The town-managed facilities east of the French River occupy a small portion of the reservoir, but, with the exception of the well field, they are already under heavy human influence.

The area leased to the State provides a natural wildlife habitat. The diversity of habitat attracts many species of wildlife while most of the wetlands are not well suited for heavy recreational use. Therefore, all lands not used for picknicking, playing field, trails and other recreation activities have been set aside for conservation of wildlife habitat.

3. Cultural Sites

Oxford is the birthplace of Clara Barton who founded the American Red Cross Society in 1881. Her home is located on Clara Barton Road, just north of the project. Its proximity offers an inducement to visitors to make use of the project facilities.

Hodges Village, located immediately below the dam, is an example of pre-Civil War architecture and town development, and in the future may become historically significant due to its isolated location and the documentation of village development since 1838 when the Norwich and Worcester Railroad was built.

b. Site Analysis and Planning

The reservoir consists of five land use areas: Greenbriar, Rocky Hill, Hodges Village, Conlin Hill, and Stumpy Pond. Management responsibilities are divided so that two areas are managed by the town of Oxford, two by the Commonwealth of Massachusetts and one by the Corps. Interwoven throughout these areas is a combination of trails, haul roads, an old railroad right of way, roadways and old streets that are being used as trails. (See Figure 6)

The Greenbriar Recreation Area, on land leased to the town of Oxford, will continue to be developed for active sports and day use recreation. Planned expansion, in addition to the three existing tennis courts, baseball field and rest rooms, consists of improving the present outdoor amphitheatre, constructing new parking areas for 50 cars, relocating access roads providing three new multiuse courts, a basketball court, a softball field, a soccer field, a utility building, ten new picnic sites, a playground and landscaping. (See Figure 7)

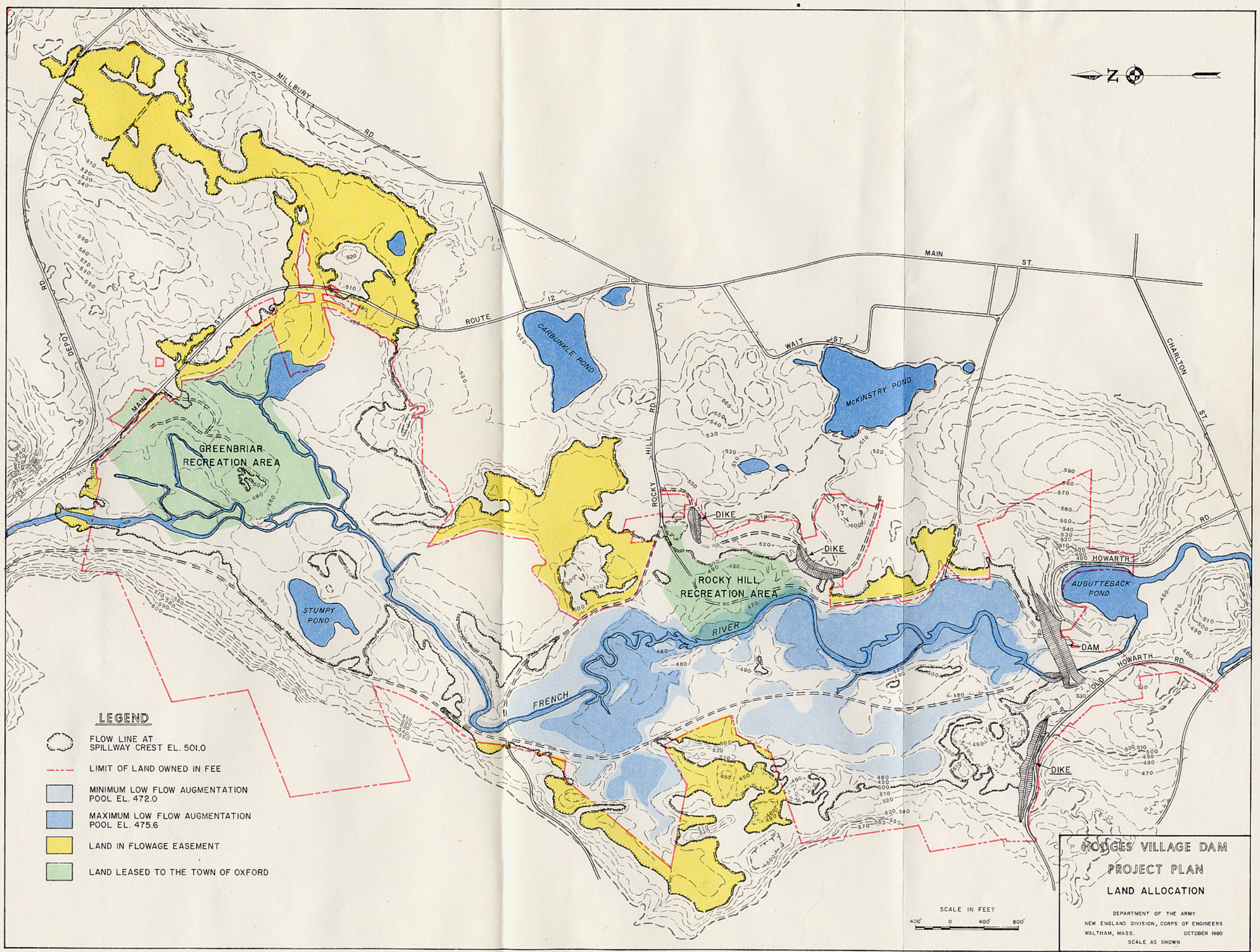

N
MILLBURY RD.
ROUTE 12
MAIN ST.
WAIT ST.
CHARLTON ST.
DEPOT RD.
MAIN ST.
HILL RD.
ROCKY
HOWARTH RD.
HOWARTH RD.
GREENBRIAR RECREATION AREA
CARBUNKLE POND
McKINSTRY POND
AUGUTTEBACK POND
STUMPY POND
ROCKY HILL RECREATION AREA
FRENCH RIVER
DIKE
DIKE
DAM
DIKE
LEGEND
FLOW LINE AT SPILLWAY CREST EL. 501.0
LIMIT OF LAND OWNED IN FEE
MINIMUM LOW FLOW AUGMENTATION POOL EL. 472.0
MAXIMUM LOW FLOW AUGMENTATION POOL EL. 475.6
LAND IN FLOWAGE EASEMENT
LAND LEASED TO THE TOWN OF OXFORD
SCALE IN FEET
400' 0 400' 800'
HODGES VILLAGE DAM
PROJECT PLAN
LAND ALLOCATION
DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. OCTOBER 1980
SCALE AS SHOWN

FIGURE 6

EXISTING RECREATION FACILITIES

1. BASEBALL FIELD
2. REST ROOMS
3. AMPHITHEATRE
4. 3 TENNIS COURTS

PROPOSED RECREATION FACILITIES

A. SOCCER FIELD
B. PARKING AREA
C. PLAYGROUND
D. SOFTBALL FIELD
E. 3 TENNIS COURTS
F. BASKETBALL COURTS
G. PARKING AREA
H. ACCESS ROAD RELOCATION AND IMPROVEMENT
I. UTILITY BUILDING

N

OXFORD HIGH SCHOOL

PUMPING STATION

ROUTE 12

ROUTE 12

SCALE IN FEET
200' 0 200' 400'

HODGES VILLAGE DAM
PROJECT PLAN
GREENBRIAR RECREATION AREA

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. OCTOBER 1980
SCALE AS SHOWN

FIGURE 7

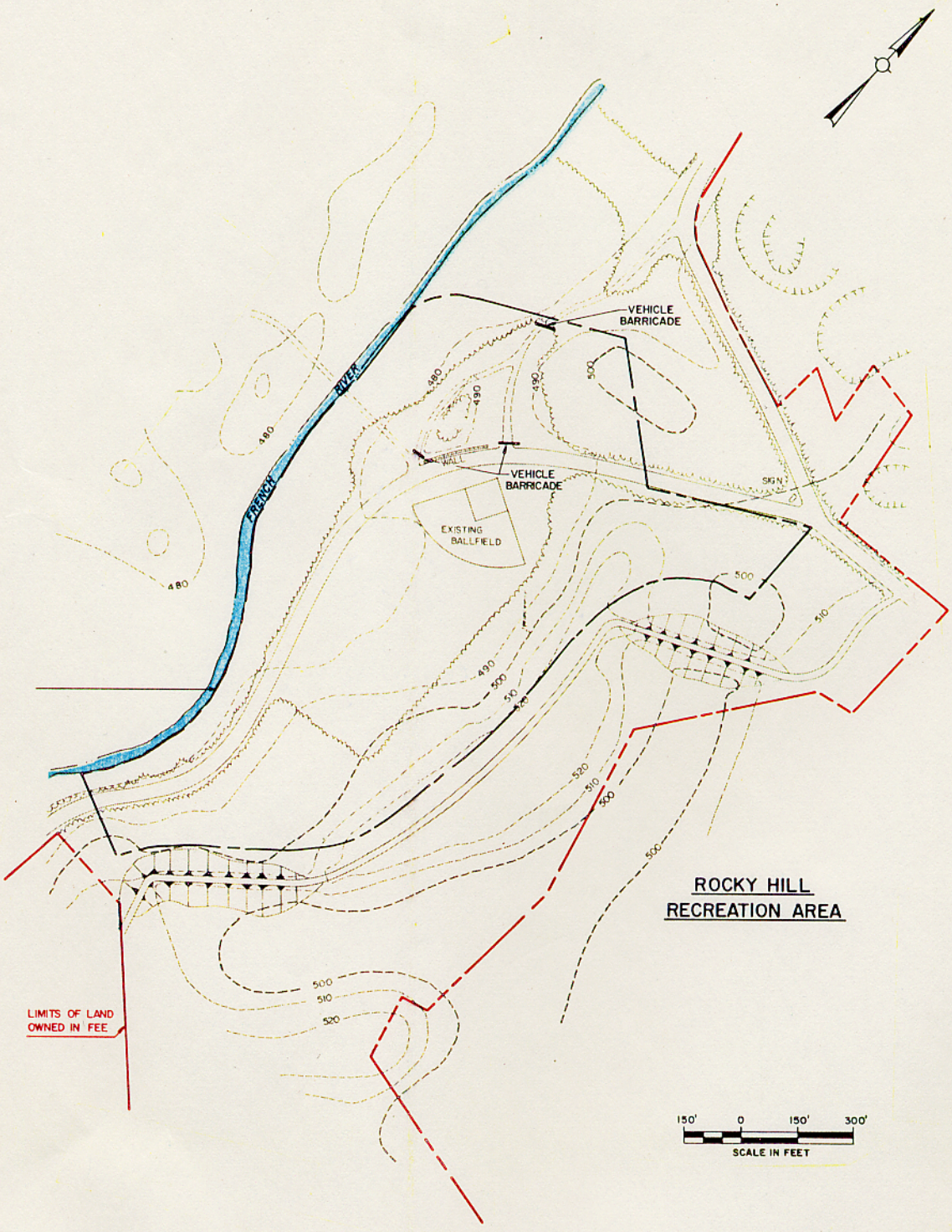
The Rocky Hill Recreation Area is also leased to the town of Oxford for recreational use with present facilities consisting of a Little League baseball field. A small picnic area used to be located here but due to continual vandalism the tables and fireplaces have been removed. Since this area is relatively isolated compared to the Greenbriar area, it is more difficult to supervise and manage. However, the ball field is well used during the summer and will continue to be maintained by the town. (See Figure 8)

The Hodges Village Dam and spillway area is maintained by the Corps of Engineers for flood control purposes. Recreation and visitor use facilities include a small picnic area and rest rooms near the Project Manager's office, and an overlook area near the spillway.

The Conlin Hill and Stumpy Pond areas, managed by the Massachusetts Division of Fisheries and Wildlife, remain in an undeveloped and natural condition. Generally, development or improvement has been and will continue to be discouraged in order that natural wildlife habitat be preserved.

c. Cost Estimates

Existing recreation development at the Greenbriar Recreation Area consists of three multiuse (tennis) courts, a baseball field, outdoor amphitheatre and rest rooms. All of these facilities except the rest rooms were provided by the town of Oxford. The rest rooms were constructed as the Corps of Engineers 50% share under a 1977 cost sharing contract. Future recreation development, primarily at Greenbriar, is summarized in the following table and may be included in facilities cost shared with the Commonwealth of Massachusetts should a low flow augmentation plan be implemented. If a low flow augmentation plan is not implemented all future recreational development would be cost shared with the town of Oxford.



HODGES VILLAGE DAM
PROJECT PLAN
ROCKY HILL RECREATION AREA

FIGURE 8

COST ESTIMATES

ITEM	UNIT	UNIT COST	EXISTING QTY	EXISTING COST	FUTURE QTY	FUTURE COST	TOTAL QTY	TOTAL COST
Rest Rooms	EA	$ 40,000	1	$40,000			1	$ 40,000
Multiuse Courts	EA	13,000	3	39,000	2	$ 26,000	5	65,000
Baseball Field	EA	25,000	1	25,000			1	25,000
Amphitheatre	EA	5,000	1	5,000			1	5,000
Softball Field	EA	25,000			1	25,000	1	25,000
Picnic Tables	EA	200	9	1,800	10	2,000	19	3,800
Fireplaces	EA	200	3	600	5	1,000	8	1,600
Utility Building	EA	10,000			1	10,000	1	10,000
Soccer Field	EA	25,000			1	25,000	1	25,000
Access Road Improvements	LF	35			1,000	35,000	1,000	35,000
Parking Areas	SPACES	300			50	15,000	50	15,000
Multiuse Trails	MI	3,000			4	12,000	4	12,000
Basketball Court	EA	13,000			1	13,000	1	13,000
Playground	LS	16,000			1	16,000	1	16,000
Topsoil, Seeding & Landscaping	LS	20,000			1	20,000	1	20,000
Sub-Total				$111,400		$200,000		$311,400
10% Escalation/Year (4 Years)						$ 80,000		$ 80,000
Contingencies (10%)						$ 20,000		$ 20,000
Total Construction Cost				$111,400		$300,000		$411,400
E&D and S&A (30%)						$ 90,000		$ 90,000
TOTAL COST				$111,400		$390,000		$501,400
FEDERAL COST				$ 42,400		$195,000		$237,400
NON-FEDERAL COST				$ 69,000		$195,000		$264,000

VII. FACILITY DESIGN RATIONALE

All future recreational development is planned with consideration given to environmental and aesthetic qualities, types of use, amount of visitation, and the ability of the area to assimilate activities with due consideration given to overuse, incompatibility and congestion.

Existing sanitary facilities at the Greenbriar Recreation Area are of the water-borne sewage type with flush toilets and town water. Wastewater treatment is by septic tank and leaching pits. The rest rooms consist of an attractive wooden structure designed to blend in with the immediate environment and are centrally located on a small knoll in the middle of the recreation area.

All existing roads throughout the project consist of a combination of trails, undeveloped haul roads, an abandoned railroad bed, and existing town roads. No new roads are planned, but improvements, including paving, to existing access roads along with new parking areas at the Greenbriar Recreation Area are scheduled.

Adequate picnic facilities are not presently available within the project area, except at the dam, where there are nine picnic tables and three fireplaces along with two drinking fountains and a rest room. Ten new picnic sites are planned for the Greenbriar Recreation Area and will be located to take advantage of shade trees while still being conveniently close to the other public use facilities.

New softball and soccer fields at Greenbriar will help alleviate the present shortage within Oxford for these facilities. New playground facilities are also planned in order to create a convenient, comprehensive and easy to manage public park and recreation area for the town of Oxford and the surrounding region.

The reservoir access roads, as well as the abandoned Boston and Albany Railroad bed and former town roads serve as access for hunters and fishermen, and as multi-use trails for cross-country skiers, snowmobiles, trailbikes, hikers and horseback riders. The Oxford Snowdusters Snowmobile Club has established and maintains trails throughout the reservoir area in cooperation with the Corps of Engineers. The use of these trails and roads for different recreational purposes has been planned to insure adequate protection to wildlife and the environment and to minimize conflicts in usage.

VIII. OPERATION AND ADMINISTRATION

The authorized purpose of the Hodges Village Dam is for the control of flooding in the Thames River Basin. It provides major protection to the towns of Webster and Dudley, Massachusetts, during flooding of the French River. Management for recreation at the reservoir is a secondary priority that should remain compatible with the primary function of flood control. Within this context, management objectives for recreation are:

a. To encourage sustained public use up to the maximum attainable carrying capacity, consistent with aesthetic and ecological values.

b. To avoid or minimize use conflicts while developing resources.

c. To be aware of and responsive to user needs and desires.

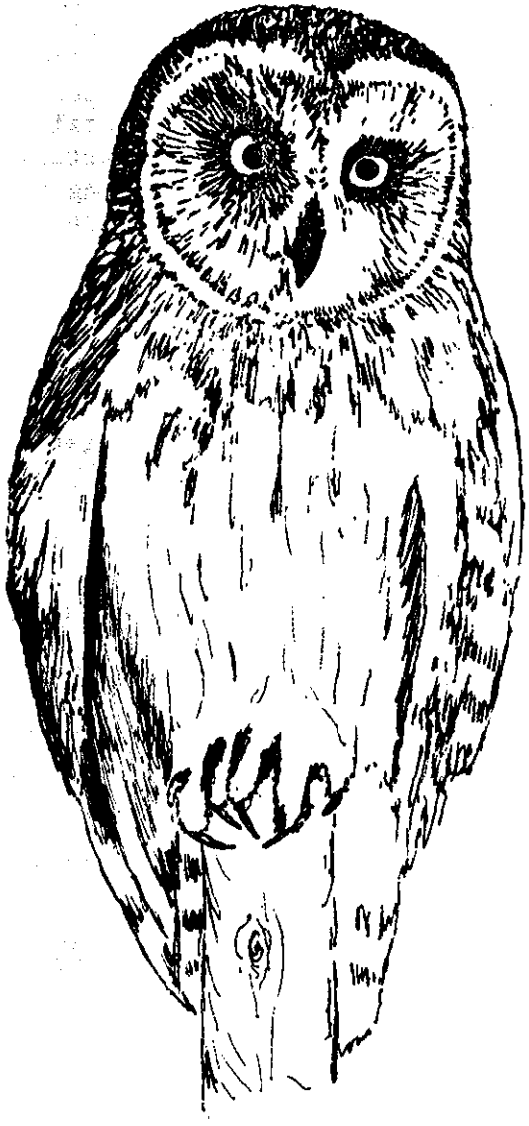
A two-man staff consisting of a Project Manager and Assistant Project Manager is provided at Hodges Village Dam to perform the continual operation and maintenance duties that are required. A temporary employee is usually hired in the summer to aid and assist the Project Manager. In addition, a Corps of Engineers ranger from the Thames River Basin office at Buffumville Lake makes regular patrols of the reservoir area to assist public visitors and enforce rules and regulations.

In addition to overseeing the operation of the dam, the field personnel supervise the use of lands and waters of the project, investigate and report on compliance with the terms of leases and permits, protect and maintain government property, and enforce high standards of public health and safety. The field personnel are provided with a field manual outlining their responsibilities and duties.

Overall administration of the recreation and conservation program at Hodges Village Reservoir will be carried out jointly by the Corps of Engineers, the town of Oxford and the Commonwealth of Massachusetts. The Corps of Engineers is concerned mainly with determining the nature and extent of development, preparing site layout plans and construction requirements, public relations with other interests and project management policies, including leases, licenses, and permits.

The town of Oxford leases 109 acres for recreational use and is responsible for administration and maintenance of these areas. The Massachusetts Division of Fisheries and Wildlife, is licensed to stock pheasants on 676 acres of the reservoir and is responsible for the enforcement of hunting and fishing regulations.

All laws and regulations concerning proper use of the project resources are enforced by the local police, fish and game conservation officers, and Corps of Engineers Rangers, with the cooperation of the Project Manager.



IX. RECOMMENDATIONS

Hodges Village Dam, originally conceived solely for flood control purposes, has evolved from an undeveloped natural habitat surrounded by a rural town into a multi-use recreation and flood control facility utilized today by both local residents and visitors. In the future, if present growth trends continue, this project could become a combination flood control facility and suburban community park providing numerous public recreation opportunities as well as flood protection.

In light of the anticipated urbanization and usage demands of a populace rapidly becoming more urbanized and desirous of seeking more intimate contact with nature, cooperation among the Town of Oxford, the Commonwealth of Massahusetts and the Corps of Engineers is mandatory in order to create and maintain a facility which provides each person with an opportunity to participate in a positive recreational experience. The following recreational development is therefore recommended to improve public utilization of Hodges Village Reservoir.

- Greenbriar Recreation Area

  Construction of two multiuse courts, a softball field, a soccer field, a basketball court, 10 picnic sites, access road relocation and paving, paved parking areas for 50 cars, a utility building, playground and landscaping.

- Reservoir Area

  Development of four miles of multi-use trails between the Greenbriar Recreation Area and Hodges Village Dam.